THE EFFECTS OF TRADE LIBERALIZATION BETWEEN INDONESIA AND JAPAN: A CASE TO INDONESIAN ECONOMY

Ario Seno Nugroho
Jurusan Bea Cukai, Polytechnic of State Finance STAN
ario_sn@pknstan.ac.id

INFORMASI ARTIKEL

Tanggal masuk
[18-08-2017]

Revisi
[04-10-2017]

Tanggal terima
[11-12-2017]

ABSTRACT:

This paper examines the effects of free trade between Indonesia and Japan on agriculture and manufacturing sector, consumer welfare, and the whole economy in Indonesia using a computable general equilibrium model based on 2008 Indonesia Input-Output Table. The general theory related to the effects of free trade says domestic consumers will benefit while disadvantages domestic producers will suffer from the free trade policy. In contrast, this study found that both the domestic consumers and the domestic industries (people who work in industries) benefit from trade liberalization scenario. The consumer welfare and economics utility would also increase. In addition, the model estimated that the reduction in government revenue, which was caused by the decreasing tariff, was lower than the addition in government revenue from non-tariff income. Finally, manufacturing sector seemed to have the highest benefit from trade liberalization while the agriculture sector was estimated to have minor outcome.

Key Words: *Free Trade, Computable General Equilibrium (CGE), Agriculture, Manufacturing, Equivalent Variation, Welfare, Utility*

ABSTRAK:

Penelitian ini memeriksa pengaruh perdagangan bebas antara Indonesia dan Jepang pada sektor pertanian dan industri, kemakmuran konsumen, dan keseluruhan ekonomi di Indonesia dengan menggunakan model computable general equilibrium berdasarkan Tabel Input-Output Indonesia tahun 2008. Teori terkait perdagangan bebas menyatakan konsumen domestik akan mendapatkan keuntungan, sedangkan produsen domestik mendapatkan kerugian bila suatu negara menerapkan liberalisasi perdagangan. Secara kontras, penelitian ini menemukan bahwa baik konsumen maupun produsen mendapatkan keuntungan dari skenario perdagangan bebas. Keuntungan konsumen dan utilitas ekonomi juga mengalami peningkatan. Sebagai tambahan, permodelan mengestimasi nilai penurunan penerimaan negara, disebabkan penggunaan tarif impor yang lebih rendah, lebih rendah bila dibandingkan peningkatan penerimaan negara dari sektor non-tarif impor. Skenario liberalisasi perdagangan di sektor industri menghasilkan dampak yang signifikan, sedang skenario yang sama di sektor pertanian tidak menghasilkan dampak yang menjanjikan.

Kata Kunci: Perdangan Bebas, *Computable General Equilibrium* (CGE), Pertanian, Industri, *Equivalent Variation*, Kemakmuran, Utilitas

A. Background and Literature Review

Countries engage in International trade because they believe the activity will benefit them, and free trade is one policy in this area. Free trade will benefit nations and exceed the production and consumption deviation; this is preferable to other trade policies. These two arguments are believed by many economics scholars. (Krugman & Obstfeld, 2009)

Indonesian government follows this idea and creates international, regional, and bilateral free trade agreements. To date, some studies have analyzed the effects of international and regional free trade agreement to Indonesian economy; in contrast, merely few studies have examined the bilateral free trade agreements.

Indonesia has signed one bilateral free trade agreement with Japan in 2007 under Indonesia-Japan Economic Partnership Agreement (IJEPA). This agreement covers eleven areas, namely: trade in goods, rules of origin, and Customs procedures, in which as a result, Indonesia's import tariff will decrease 93% in certain time. (Setiawan, 2012) This thesis aims to investigate the possible effects of trade liberalization between Indonesia and Japan on Indonesia's agriculture and manufacturing sectors, consumer welfare, and finally the impact on its economy. Agriculture is one of the key sectors in Indonesia since there are almost 40 million out of 100 million Indonesia labor forces work in this sector as of August 2008 (Penduduk 15 Tahun Ke Atas yang Bekerja menurut Lapangan Pekerjaan Utama 2004-2011, 2011). On the other hand, the manufacturing sector plays a major role because it occupies around 500 trillion rupiahs out of 2,000 trillion total Indonesian GDP, which makes manufacturing sector the biggest sector of Indonesian GDP in 2008. (Pendapatan Domestik Bruto Atas Dasar Harga Konstan 2000 Menurut Lapangan Usaha (Miliar Rupiah), 2010). In addition, in the beginning of the agreement (2008), Indonesian imports from Japan's worth $ 13,727,936.05, equal to 10,6% of total Indonesian import from the world (compute by the writer from UNCTAD Data). This study examines quantitatively the effects of trade liberalization with Japan on Indonesia's agriculture and manufacturing sectors, consumer welfare, and Indonesian economy by using a computable general equilibrium (CGE) model. In addition, The Indonesia Input-Output Table for year 2008 is used in order to obtain simulation results which closely reflect the actual condition. This thesis hypothesizes that Indonesia's economy will benefit from the trade liberalization between Indonesia and Japan; in particular, lowering import tariffs in agriculture and manufacturing imports from Japan will exceed the production and consumption deviation.

This paper results tend to support the general principles of trade liberalization. The simulations estimate that the effects of free trade with Japan in agriculture and manufacturing sectors will expand Indonesian welfare. Although the bilateral trade liberalization scenario in both manufacturing and agriculture sectors benefit Indonesian economy, the free trade's impact is highly visible in the manufacturing sector. In addition, this research finds an interesting result, in which a free trade scenario will increase the government revenue. This result can be explained as follows: first, the tariff reduction stimulates both the consumption and the production sectors and reduces tariff revenue; second, Indonesian economy as a whole increase due to the stimulation; and third, larger economy would produce higher income from other

taxes, which overcome reduction in tariff revenue.

The preceding paragraph shows the importance of this paper, which will be further divided into two parts. First, this study estimates that the trade liberalization with Japan in the manufacturing sector will give higher benefits to Indonesian economy compare to free trade with Japan in the agriculture sector. Second, there is an option for Indonesian government to stimulate the economy without harming the government revenue.

The following chapters will review the free trade studies. The data and model specification will be described in Chapter 3. Chapter 4 will perform the calibration and simulation. Lastly, Chapter 5 will conclude this paper.

1. International Trade Theory

Countries in the world can use international trade as an alternative to boost their countries. There are three well known theories of international trade[1]. The theories are The Ricardian model, The Short Term Heckscher-Ohlin model or The Specific-Factor model, and The Long Term Heckscher-Ohlin model. The following paragraphs will discuss the theories.

The Ricardian model introduces the idea of comparative advantage between countries which derives from labor productivity. This theory says a country will have a comparative advantage to other nations. The meaning of comparative advantage is a country has a sector, which yield higher compares to others given the equal input. This theory states when a nation participates in the international trade, the nation has a choice to focus their production to the sector, which has comparative advantage, and export the surplus. In addition, to satisfy the demand of goods which produce by the comparative disadvantage sector, the country will import from other country. These activities will create higher utility for the nation. (Feenstra & Taylor, 2008; Krugman & Obstfeld, 2009)

The Ricardian theory induces to the next theory of international trade, the short term specific-factor or Heckscher-Ohlin model. This theory tries to analyze the outcomes of international trade in the short term. The assumptions in the model are: first, the model defines the land as agriculture input and capital as manufacturing input; next, the capital and the land could not move across them; third, both the agricultural and the manufacturing employ the labor; fourth, the labor follows the diminishing return; and last, the model analyze in the short term period. The Heckscher-Ohlin theory predicts the comparative advantage sector will benefit from international trade policy. In the contrary, the disadvantageous sector will jeopardize from international trade activity. Furthermore, the consequences to the labor due to the international trade could not be specified because the labor will reap benefit in disadvantageous sector and suffer loss in the advantageous sector. (Feenstra & Taylor, 2008; Krugman & Obstfeld, 2009)

The last theory is the long term Heckscher-Ohlin model. This theory put one more assumption, that is the ability of capital from each sector to move across sectors in the long term. This assumption results in the difference between capital or labor abundant country. The country's results in the international trade will be determined by the resource, which is plenty or scarce in the nation. The owners of the abundant resource will obtain profits from the international trade; while in

[1] The theories utilize the perfect competition market method. On the other hand, there is a new trade approach, which is famous as intra-industry trade and specialization. (Grimwade, 2000)

contrast, the scarce resource holder will lose from the international trade. This situation is well-known with Stolper-Samuelson theorem. Even though there will be lose in specific sector, in the long term, the new nation utility is increasing than before. (Feenstra & Taylor, 2008)

All previous theories show the benefits for the country, which join the international trade. In addition, the Heckscher-Ohlin model in short and long term also reveal that there are adverse actors when a country engaging in international trade.

2. Tariff Policies Theory

In general, there are two tools in the international trade policy, tariff and non-tariff. Tariff is "a tax levied when a good is imported." (Krugman & Obstfeld, 2009, page 182). In Indonesia, article 1(15) Law no 10 year 1995 states tariffs are a government levies under customs act, which is charged on the imported goods. (Indonesian Legislative; Indonesian President , 1995) Previously, Tariffs have been used to fund government budget; as an example, before the establishment of income tax, most of the U.S government budget was financed by tariffs. Furthermore, small countries revenue might be funded from tariffs. In addition, tariffs are also used by countries to protect their national interests in specific domestic areas, as an example, protection to the producer sector. The government might be put his side in the producer rather than consumer, due to the easiness in identification. When the tariffs are imposed, there are four effects that accompany this action. The effects are consumer loss, producer gain, government revenue, and welfare loss. (Feenstra & Taylor, 2008; Krugman & Obstfeld, 1991)

In contrary, trade liberalization will result effects in the reverse side of tariffs application; those are primarily consumer surplus, producer loss, and increase in national welfare. In addition, decreasing in government revenue could be occurred when tariff is abolishing. (Feenstra & Taylor, 2008; Krugman & Obstfeld, 1991) Furthermore, free trade also leads to two additional benefits: first, the local industries could increase their efficiency and economies of scale; second, the domestic industries could improve their learning and innovation process in order to win the local and international market competition. (Krugman & Obstfeld, 2009)

3. Previous Studies on International Trade

Sadoulet and Janvry say the OECD free trade would have effects to the agriculture sector on disadvantages nations, which import cereal products. A general equilibrium-multimarket approach shows the poor African countries, where the cereal products have no competition, would face increasing agriculture import tariff revenue and decreasing exchange rate. In contrast, the Asian countries where cereal products face competition, the results would be in contrasting way. (Sadoulet & Janvry, 1992)

Feridhanusetyawan and Pangestu study shows the welfare of Indonesia would be increase when implements two Asia Pacific Region main free trade agreements, Uruguay Round (UR) and Asia Pacific Economic Cooperation (APEC). This study uses the Global Trade Analysis Project (GTAP), a static global computable general equilibrium model, and third edition GTAP database. They estimate Indonesia welfare, in this case measured by equivalent variation, would increase 5.63 $ billion for UR agreement framework and increase 7.70 $ billion when added with APEC free trade scenario. (Feridhanusetyawan & Pangestu, 2003)

In addition, Hossain and Alauddin research shows trade liberalization changes the export approaches in Bangladesh. Moreover, the autoregressive distributed lag model (ARDL) and ARDL co integration approaches indicates trade liberalization has increased the export volumes. (Hossain & Alauddin, 2005)

Trade liberalization study by Baggs and Brander finds useful and negative impacts of trade liberalization. The regression method shows the export oriented industries benefit while import substitution manufactures suffer from Canada-US Free Trade Agreement. In addition, the leverage would be increase when import tariff were reduced. In contrast, the opposite results have tendency occurred when export tariff lower (Baggs & Brander, 2006)

Gumilang, Mukhopadhyay, and Thomassin find that there is a positive effect of ASEAN Free Trade Area (AFTA) and Indonesia-Japan Economic Partnership Agreement to the Indonesia's Output. They use GTAP and six version GTAP database. They estimate under the AFTA and IJEPA scenarios, that Indonesian economy will increase in an additional 0,47% and 0,11% in 2022 compared to growth in a no free trade scenario. (Gumilang, Mukhopadhyay, & Thomassin, 2011)

Later, Setiawan discovers positive impacts from IJEPA implementation. Using econometric analysis, he finds that both Indonesian and Japan will gain from the IJEPA, however, Indonesian will acquire more compare to Japan. (Setiawan, 2012)

B. Data and Model Specification

1. Data

Four data are used in this thesis: the 2008 Indonesia Input-Output Table (I-O Table), which is produced by BPS-Statistics Indonesia; the 2008 annual report of Directorate General of Taxation of Ministry of Finance of Indonesia; goods imported from Japan to Indonesia, which is produced by United Nations Conference on Trade and Development (UNCTAD); and 2008 Indonesia's exchange rate, which is stated by the Central Bank of Indonesia.

In order to match the CGEM, the data have to be converted to the Social Accounting Matrix and the treatments are as follows. First, the I-O table is simplified from original 66 sectors to three sectors: agriculture (M_1), manufacture (M_2), and all other sectors (M_3). Second, the simplified I-O table and the amount of tax paid by households to the government from the annual report of year 2008 of Directorate General of Taxation of Indonesian Ministry of Finance are used to create the 2008 Indonesian Social Accounting Matrix (SAM).

Kehoe shows the advantages and accurateness of the economic model which combines SAM and General Equilibrium Model when it replicates the economic changes (Kehoe, 1996). SAM generates important economics information and three of them are sector relationship, income distribution, and foreign-domestic economy relationship. For instant, an even number of rows and columns develop Social Accounting Matrix. It displays the activities flow in the production, factor markets, and organization. The movement from the column to row's account replicates the payment flows; while the motion from the row's account to the column's account shows the receipt flows.

Three sectors constitute the SAM table; namely manufacturing, agriculture and all other sectors. All of them produce goods or services and use labor, capital, and intermediate goods for the main inputs. The inputs can be nationally produced or internationally imported.

2. General Equilibrium Model

Shoven and Whalley state an equilibrium position, where all markets are clear, as a reasonable interpretation of general-equilibrium model in society. (Shoven & Whalley, Applied General-Equilibrium Models of Taxation and International Trade: An Introduction and Survey, 1985). Ballard, et al. says that if the system sphere is in a small-scale, the using of partial equilibrium will be sufficient, and it is no need to use general equilibrium; in contrast, when the scale is immense, partial equilibrium will be no longer enough. In addition, the number of economic scientists who use general equilibrium approach increased dramatically in the last twenty years. (Ballard, Fullerton, Shoven, & Whalley, 1985). Moreover, introduction of computer in general equilibrium model increases the problem dimension which can be figured. (Shoven & Whalley, Applied General-Equilibrium Models of Taxation and International Trade: An Introduction and Survey, 1985)

3. Model Specifications

This study adopts the computable general equilibrium model which is developed by Budiyono and Kato (2011). This model is static and does not consider a time dimension. The purpose of using this general equilibrium framework and 2008 Indonesian I-O table is to obtain an analysis closer to the real Indonesian economy. Three actors are assumed in this study: households, government, and firms. In addition, maximization of profit in production sectors and maximization of utility in consumption sectors are assumed. Another key assumption is that the economy is full competitive, in which the amount of demand is equal to the amount of supply. It means that all producing factors from households will be solely used by the firms, and all output from the firms will be totally consumed by the household, vise versa. Moreover, in order to define the effects of trade liberalization to Japan case, the share of imports from Japan as a discount factor is assumed. The details of each assumption will be explained in the next section.

C. Result and Discussion

1. Calibration

As described in the previous chapter, the full competitive condition or amount of demand equals supply in Indonesian economy is assumed. In addition, all households' factors endowments are absorbed by firms. Moreover, it is assumed households use Cobb-Douglas function of preferences in order to maximize their utility. On the other side, firms' outputs, which produce under zero profit condition, are totally consumed by households.

In order to create a policy simulation from CGE modeling, parameter value determination for each function is essential. The parameter values are obtained from calibration process, which is a mechanism to create a benchmark equilibrium model from all model specifications. (Shoven & Whalley, 1992)

This study benchmark has successfully replicated the existing Indonesia Economy. The CGE model produces benchmark variables, which are similar with the actual value. The CGE model is used to calculate the value of Indonesian economy numerically; it is used also to introduce the economic shocks in agriculture, manufacturing, and other macroeconomic variables. This paper will specifically examine the effects of trade liberalization between Japan and Indonesia in Indonesia's agriculture and manufacturing sector by changing the import tariff rate. In addition, the CGE

model results will be adjusted by discount factor in order to estimate the effects of trade liberalization with Japan on Indonesia.

The model and actual SAM show the 2008 import tariff rate in the Indonesian agriculture and manufacturing sector are 1,51% and 2,26%, respectively. These numbers are calculated by dividing the total amount of the import tariff of agriculture and manufacturing by the total amount of their import value. It has to be considered that the 1,51% and 2,26% are the average tariff rate for the Indonesia's agriculture and manufacturing sector, respectively. This paper model specification shows the larger import tariff revenue will be obtained by Indonesia government when the tariff rate is increased. On the other hand, the society as a whole will suffer from this policy and the tax collection from income, production, and import tax will decrease. The opposite condition will occur when the import tariff is lower. Consequently, the effect for the collection of government revenue from taxes will be determined by the resultant of tariff effect and other tax effects.

2. Simulations

There are 2 scenarios constitute policy shock in this paper. First, simulation A, which introduces 100% tariff reduction in agricultural goods imported from Japan. Second, simulation B, which incorporates 100% tariff reduction in manufacturing goods imported from Japan. All simulations will be conducted in two steps: first, by applying tariff changes to the sector in general; second, by discounting the result with the share of imported goods from Japan. Each policy will be explained in the next paragraph.

First, simulation A and B can be determined as full trade liberalization policy in agricultural and manufactured products imported from Japan, which reduce the tariff rate for both sectors into 0%. Certainly, all above simulations reduces the government revenue from import tariff. In contrast, the other taxes are predicted increased due to increased welfare society.

Though the literature states trade liberalization increase consumer and decreased disadvantageous producer welfare, this study shows interesting implication.

3. Results Analysis

The equivalent variation is used to analyze the trade liberalization effects on consumers' welfare. In addition, the change in utility is used to indicate the whole effects on the economy.

3.1. Simulation A

In this simulation, the Indonesian economy is shocked by 100% reduction in the import tariff rate of agricultural products imported from Japan. As stated in the previous section, the results will be explained in general and then narrowed to the Japanese share.

3.1.1 General Result

In general, the policy leads a positive change in imported goods for all sectors; the simulation shows that not only it benefits the agriculture sector (M_2) but also improves the manufacturing (M_1) and all other (M_3) sectors. The price, quantity, and value of all sectors are increased; exceptionally, the price of all other sectors decreased. This results show the agriculture has a close interaction with the other two sectors; however, the agricultural sector seems to have the higher changes.

As stated in the above paragraph, the reduction of tariff rate stimulates all import goods in all sectors in Indonesia. This situation leads a prediction that the

final consumption goods of all sectors (Manufacture (Q_1), Agriculture (Q_2), and all other sectors (Q_3)) will be also increased. In contrast with the import goods result, the change in Q1 (consumption in manufacturing) leads to the change in final consumption goods. This result shows the manufacturing sector is able to optimize the reduction tariff in the agriculture sector higher than the other two sectors. This can be explained since the manufacturing sector utilizes the agriculture inputs higher than the agriculture sector itself in producing final consumption goods. Clearly, the increase in demands (final consumption goods), in all sectors, will be followed by the increase in the supply side. This increase can be traced back to the composite goods (Y), domestic goods (Z), final domestic goods (D), and export goods (E) in all sectors.

Moreover, in order to produce goods, the manufacturing sector will use production factors (capital and labor). It is evident that the more production output leads to the higher input needs. The A simulation shows capital and labor income in all sector are increasing, and the manufacturing sector receives the highest change percentage. This finding is in line with the preceding paragraph stating that the manufacturing sector leads the utilization of agriculture trade liberalization. In addition, the increase in capital and labor income will also produce more demand in final consumption goods.

This paper assumes that there are four sources of government revenues; namely income tax, production tax, import tariff, and import tax. This simulation shows that income tax, production tax, and import tax increase while import tariff decrease. This result shows the income society, production value, and import values increase. Since these factors increase, the tax generated from income tax, production tax, and import taxes are also higher than previous condition. The increase in income tax, production tax, and import tax minus the decrease in import tariff results the positive net effect.

Another assumption is that private savings, government savings, and foreign savings constitute the budget constraint of the private investment sector. The estimation shows the government deficits (negative government savings, S^g) and the private savings (S^I) are increasing while the foreign deficit (negative foreign savings, Sf) decreasing. Moreover, this paper assumes the government saving is calculated from multiplication of government saving ratio and the total amount of government revenue. Since the government revenue is ascending while saving ratio is constant (in this case negative ratio), the deficit will increase. Escalation in both government revenue and deficit induces larger government consumption (X_g). Since the economy is assumed in full competitive, this higher demand will be satisfied by larger supply from the corresponding sector. This situation leads an improvement in all production steps.

The previous paragraph shows the government consumption (X_g) is increasing. Since the government has no consumption in agriculture and manufacturing sector, obviously all increase will be absorbed by all other sector. In private consumptions (Xy) terms, all sectors show relatively same percentage increase. These shows the private spend their additional income evenly across the sectors.

The equivalent variation (EV) is used to determine the effect of trade liberalization on the consumers' welfare. The simulation demonstrates the shock leads to the positive value of EV, which means the society welfare is better off. The explanation is that the tariff reduction

stimulates the consumers and producers in the economy.

This first simulation shows all sectors gain benefits from trade liberalization in the agriculture sector. Both consumption and production produce a higher level compare to the previous condition. The equivalent variation (EV), which is used to determine the changes in the consumers' welfare, shows a positive result. The increase in production leads the improvement in capital and labor income which in turn also increases the demand again. In the government sector, all revenues are increases, except import tariff, which is decreases. Though there is variation result, the resultant is increases in government revenue.

3.1.2 Specific Results

In order to examine the effects of 100% reduction in the import tariff rate of the agricultural import from Japan, the overall results have to be discounted to the agricultural import from Japan share. The share value is 0,004% and this is applied to discount the effect of trade liberalization with Japan in the agriculture sector. The calculation shows that the result and estimates of the effects of trade liberalization in the agriculture sector with Japan is small compared to the original condition. Though in general the trade liberalization shows economics improvement, in Japanese share case, the result is inessential.

Table A

	CV	EV	Utility
Before	0	0	1161195
After	4834.2	4831.6	1163932
Change	4834.2	4831.6	2737
Percentage			0.24%
Japan Factor			
Change	0.212	0.212	0.12
Percentage			0.000010%

Taxes					
Income Tax	Production Tax	Tariff	Import Tax	General Subsidy	Import Subsidy
250484	196685	22766	85075	199702	41189
251075	196903	21998	85357	199912	41288
591	218	-768	282	210	99
0.236%	0.111%	-3.373%	0.331%	0.105%	0.240%
0.0258967 6	0.0095	-0.03365	0.01235	0.0092	0.00433
0.00001 0%	0.000005%	-0.00015%	0.000015%	0.000005%	0.00001%

Saving		
Private	Government	Foreign
1751059	-102746	-139481
1755185	-102750	-137074
4126	-4	2407
0.236%	0.004%	-1.726%
0.180795348	-0.000175274	0.105471256
0.000010%	0.0000002%	-0.000076%

3.2. Simulation B

This simulation applies 100% reduction in the import tariff rate of the manufactured products imported from Japan. The explanation of this simulation will also use a similar approach as simulation A.

3.2.1 General Results

In general, the policy creates a positive change in import goods for all sectors. The price, quantity, and value of all sectors increased. When the results are compared to simulation A, magnitude of change is almost 40 times the simulation A. These results show that the manufacturing

sector dominates the Indonesian economy and has a close relationship with the other two sectors. In addition, the import goods in the manufacturing sector have the higher growth compared to the other sectors.

As shown in the previous paragraph, the abolition of tariff rate stimulates all import goods in all sectors in Indonesia. It is also predicted that the final consumption goods of all sectors (Q_1, Q_2, and Q_3) will increase, which is supported by the values of final consumption goods in computation. In this simulation, the change in Q_1 leads the changes in final consumption goods. This result shows that the manufacturing sector can optimize the reduction tariff in manufacturing better than other two sectors. In addition, this can be explained that the manufacturing sector utilizes the inputs from itself higher than the other two sectors in producing final consumption goods. When this result is compare with simulation A, magnitude of simulation B is 40 times higher than simulation A. Obviously, the increase in demands (final consumption goods), in all sectors, will be followed by the increase in the supply side. This increase can be traced back to the composite goods (Y), domestic goods (Z), final domestic goods (D), and export goods (E) in all sectors.

In order to produce goods, the manufacturing sector will use production factors (capital and labor). Clearly, the more production output leads to the higher input needs. The simulation shows capital and labor income in all sector increase and again the manufacturing sector receives the highest percentage of change. These findings are also in line with the previous paragraph saying that the manufacturing sector leads the utilization of manufacturing trade liberalization. Moreover, the increase in capital and labor income will also generate more demand in final consumption goods.

The effects toward government revenues are within the same direction with simulation A. The computation shows the income tax, production tax, and import tax are increasing while import tariffs are decreasing. The tariffs reduction accounted 95,3% from previous tariffs revenue. In contrast, the others revenues show significant increase which can overweight the tariff income decrease. This reflects the stimulation in the income society, production value, and import value can produce greater revenue from income tax, production tax, and import tax. The change of government income in simulation B is around 34 times simulation A. Moreover, the simulation shows the government deficits (negative government savings, S^g) and the private savings (S^I) are increasing while the foreign deficit (negative foreign savings, Sf) decreasing. Clearly, the deficit will increase because the government revenue is rise. As we know from simulation A, the escalation in both government revenue and the deficit will generate higher government consumption (X_g). Because of the economy in full competitive assumption, this higher demand will be satisfied by larger supply from the corresponding sector. This condition leads an improvement in all production steps.

The previous paragraph states the government consumption (X_g) increases. Since the government consumes only in all other sector, the increase will be fully absorbed by all other sector. In private consumptions (Xy) terms, all sectors show also relatively similar percentage increase. These shows the private spend their additional income evenly across the sectors.

The equivalent variation (EV) shows the positive value. This means the trade liberalization policy in the manufacturing sector leads better society welfare. The simulation B's EV is 30 times

higher than simulation A. This means the manufacturing sector has a greater impact than agriculture on Indonesian economy.

This second simulation shows a similar trend with simulation B. All sectors gain benefits from trade liberalization in the manufacturing sector. Both consumption and production produce a higher level compare to the previous condition. The equivalent variation (EV) shows a positive result. The increase in productivity leads the improvement in capital and labor income which induces again greater demands. In the government sector, all revenue growth except import tariff and the resultant is having a positive net effect. In addition, the government's deficit and consumption are also increasing. Moreover, the difference between simulation B and simulation A is the magnitude of changes in simulation B is between 30 to 40 times higher than simulation A. This can be concluded that the manufacturing sector dominates the Indonesian economy.

3.2.2 Specific Results

In order to examine the effects of 100% reduction in the import tariff rate of the manufacturing import from Japan, the general results have to be discounted to the manufacturing import from Japan share. The manufacturing import from Japan share to the entire Indonesia Import is 12,67 %. The result of the discount process shows the effect of trade liberalization in the manufacturing sector with Japan seems essential to the original condition. There are two reasons for this result: first, in general the trade liberalization in the manufacturing sector creates a vast improvement in the Indonesian economy; second, the share value of manufacturing import from Japan is significant to the whole Indonesia import in manufactures.

Table B

	CV	EV	Utility
Before	0	0	1161195
After	148773	146421	1244118
Change	148773	146421	82923
Percentage			7.141%
Japan Factor			
Change	18849.5391	18551.5407	10506.3441
Percentage			0.90%

Taxes					
Income Tax	Production Tax	Tariff	Import Tax	General Subsidy	Import Subsidy
250484	196685	22766	85075	199702	41189
268372	203286	1069	93083	206063	45149
17888	6601	-21697	8008	6361	3960
7.141%	3.356%	-95.304%	9.413%	3.185%	9.614%
2266.4096	836.3467	-2749.0099	1014.6136	805.9387	501.732
0.90%	0.43%	-12.08%	1.19%	0.40%	1.22%

Saving		
Private	Government	Foreign
1751059	-102746	-139481
1876103	-102903	-66612
125044	-157	72869
7.141%	0.153%	-52.243%
15843.0748	-19.8919	9232.5023
0.90%	0.019%	-6.62%

Both the simulation A and B show the inline result with Setiawan study. Although there is a methodology differences, this paper also shows that IJEPA benefits Indonesia.

3.3 Policy Implications

There are four implications from the above results. Those are the trade liberalization policy increases the national welfare; the free trade could generate higher government revenue; the liberalization in industry sector results greater effect than agriculture sector in Indonesia; and the government could customize the bilateral trade agreement. Each of the implications will discuss in below paragraphs.

This paper estimates that the liberalization policy increases the society welfare. The positive value in Equivalent Variation (EV) shows the improvement in welfare. Both liberalization scenarios in industry and agriculture result in a positive value.

Second, the free trade policy could increase the government revenue. It is common that to improve or stimulate economy the government would have to bear a certain amount of cost. This study shows the opposite result; the government has an option to stimulate economy and in the same time increase the revenue. The reduction in the tariff income is lower than the additional revenue from non-tariff income.

Third, in Indonesian economy, the liberalization in industrial sector is estimated to have a greater impact than the same policy in the agricultural sector. This result shows that the industrial sector plays more role in Indonesian economy, and liberalization in this sector will generate huge impact on Indonesian welfare.

Fourth, in the bilateral trade agreement, there is a possibility to specify the agreement. This study shows that there are different results from free trade scenarios. The differences come from different sectors and discount factors.

In conclusion, there are four policy implications from this study. Those are the improvement of social welfare due to the free trade policy; the government could raise more money from liberalization; in Indonesian economy, free trade in industrial sector resulted better than in agricultural sector; and there is an option to specify the bilateral trade agreement.

D. Conclusion

This research has examined the effects of trade liberalization that Indonesia has with Japan on the agricultural sector, manufacturing sector, consumer welfare, and the whole economy in Indonesia. The 2008 Indonesia Input-Output Table, which is simplified to three sectors, is used to create Indonesia Social Accounting Matrix (SAM). A CGE model is used to generate Indonesian economy benchmark from SAM data. Various rates of the import tariff in agriculture and manufacturing sector are used, in this model, to simulate the trade liberalization shocks. In order to calculate the effects of free trade with Japan, a discount factor which shows Japanese share has to determine. Three things are used to create the discount factor. Those are the amount of goods imported from Japan to Indonesia in 2008, the 2008 Indonesia's exchange rate, and the total amount of Indonesia's imports in 2008. The results of this paper show some interesting findings: first, the sector is essential in the free trade effects; second, the value of partner discount factor in the import sector is also necessary; third, there is an option for the government to stimulate the economy and increase revenue in the same time.

The free trade simulations estimate that the consumers' welfare and utility would be higher in a trade liberalization economy than in no trade liberalization policy. The results also estimate the producer sector would create bigger production and national income (capital and labor). The increase in producer output

and national income generates higher government revenue from non-tariff taxes and exceeds the reduction in tariff income. Larger government revenue increases the government spending which induces higher government spending. In addition, the anti-trade liberalization scenarios estimate almost exact opposite results from free trade policy. Consumers, producers, and government benefit from free trade scenario.

Even though the results estimate improvement in all sectors, the tariff reduction in manufacturing sectors shows substantial effects than tariff reduction in the agriculture sector. Moreover, the application of discount factors estimates that the effects of trade liberalization with Japan on manufacturing sector is essential for Indonesian economy. On the other hand, the free trade with Japan in agricultural sector, the simulation estimates a minor change from the original condition.

The results of this study support, the general and specific, concepts of trade liberalization. First, the trade liberalization policy improves the economy as a whole. Second, although the government income from tariffs decrease, the improvement in economy leads higher non-tariff taxes which the resultant is increasing in government revenue. Moreover, this paper shows the estimation effects of bilateral trade liberalization would differ for each sector. The sources of variation are predicted yielding from sector share, relationship with other sector, and the partner share in imports for each sector.

References

Baggs, J., & Brander, J. A. (2006). Trade liberalization, profitability, and financial leverage. *Journal of International Business Studies*, 196-211.

Ballard, C. L., Fullerton, D., Shoven, J. B., & Whalley, J. (1985). *A General Equilibrium Model for Tax Policy Evaluation.* Chicago: The University of Chicago Press.

BPS. (2009). Tabel Input-Output Indonesia updating 2008 (Indonesia Input-Output Table Updating 2008). Jakarta, Indonesia: Badan Pusat Statistik.

Budiyono, A., & Kato, R. R. (2011). Should Indonesia Suffer from More Reduction of The Subsidy to the Petroleum Sector. *IUJ Research Institute*.

Feenstra, R. C., & Taylor, A. M. (2008). *International Economics.* New York: Worth Publisher.

Feridhanusetyawan, T., & Pangestu, M. (2003). INDONESIAN TRADE LIBERALISATION:ESTIMATING THE GAINS. *Bulletin of Indonesian Economic Studies, Vol. 39, No. 1*, 51-74.

Grimwade, N. (2000). *International trade : new patterns of trade, production & investment* . London: Routledge.

Gumilang, H., Mukhopadhyay, K., & Thomassin, P. J. (2011). Economic and Environmental Impacts of Trade Liberalization: The Case of Indonesia. *Economic Modelling*, 1030-1041.

Hossain, M. A., & Alauddin, M. (2005). Trade Liberalization in Bangladesh: The Process and Its Impact on Macro Variables Particularly Export Expansion. *The Journal of Developing Areas Volume 39 Number 1*, 127-150.

Kalkulator Kurs. (2009). Retrieved 12 18, 2011, from www.bi.go.id: http://www.bi.go.id/web/id/Moneter/Kalkulator+Kurs/defaultTable.htm?id=val&tipe=Local&bgn=0&mod=1&jmlh=1&kurs=USD&period1=2007&period2=2008

Kehoe, T. J. (1996). *Social Accounting Matrices and Applied General Equilibrium Models.* Minneapolis: Research Department of Federal Reserve Bank of Minneapolis.

Krugman, P. R., & Obstfeld, M. (2009). *International Economics Theory and Policy.* Boston: Pearson Education, Inc.

Legislative, I., & President, I. (1995). Law no 10 of the Customs. Lembaran Negara Republik Indonesia.

Pendapatan Domestik Bruto Atas Dasar Harga Konstan 2000 Menurut Lapangan Usaha (Miliar Rupiah). (2010). Retrieved March 14, 2012, from www.bps.go.id: http://www.bps.go.id/tab_sub/view.php?tabel=1&daftar=1&id_subyek=11&notab=3

Penduduk 15 Tahun Ke Atas yang Bekerja menurut Lapangan Pekerjaan Utama 2004-2011. (2011). Retrieved March 14, 2012, from www.bps.go.id: http://www.bps.go.id/tab_sub/view.php?tabel=1&daftar=1&id_subyek=06&notab=2

Sadoulet, E., & Janvry, A. d. (1992). Agriultural Trade Liberalization and Low Income Countries: A General Equilibrium-Multimarket Approach. *American Journal of Agricultural Economics, Vol. 74, No. 2*, 268-280.

Setiawan, Sigit. (2012). Analisis Dampak IJEPA Terhadap Indonesia dan Jepang. Jurnal Ilmiah Ekonomi Bisnis 17

Shoven, J. B., & Whalley, J. (1985). Applied General-Equilibrium Models of Taxation and International Trade: An Introduction and Survey. *Journal of Economic Literature Vol.XXII*, 1007-1051.

Shoven, J. B., & Whalley, J. (1992). *Applying General Equilibrium.* Cambridge: Cambridge University Press.

UNCTADSTAT. (n.d.). Retrieved 07 12, 2012, from http://www.unctad.org: http://unctadstat.unctad.org/TableViewer/tableView.aspx

APPENDIX

Simulation A

	CV	EV	Utility
Before	0	0	1161195
After	4834.225	4831.663	1163932
Change	4834.225	4831.663	2737
Percentage			0.236%
Japan Factor			
Change	0.211828743	0.211716480	0.119931379
Percentage			0.000010%

Income Tax	Production Tax	Tariff	Import Tax
250484	196685	22766	85075
251075	196903	21998	85357
591	218	-768	282
0.236%	0.111%	-3.373%	0.331%

Simulation B

	CV	EV	Utility
before	0	0	1161195
after	148773	146421	1244118
change	148773	146421	82923
Percentage			7.141%
Japan Factor			
change	18849.5391	18551.5407	10506.3441
Percentage			0.90%

	Taxes		
Income Tax	Production Tax	Tariff	Import Tax
250484	196685	22766	85075
268372	203286	1069	93083
17888	6601	-21697	8008
7.141%	3.356%	-95.304%	9.413%
2266.4096	836.3467	-2749.0099	1014.6136
0.90%	0.43%	-12.08%	1.19%